What is claimed is:

1. An apparatus for controlling rotational speed of a motor, the motor being operable to apply torque to a rotor within a centrifuge, the centrifuge being configured to contain a predetermined amount of kinetic energy (KE_{pred}) resulting from a failure of the rotor, the apparatus comprising:

a processor configured to determine an acceleration rate and a deceleration rate of the rotor, the processor being further configured to determine an amount of kinetic energy of the rotor at a set rotational speed (KE_{ss}) in response to the acceleration rate and the deceleration rate and the processor being further again configured to compare the KE_{ss} to the KE_{pred}, wherein the processor is configured to substantially prevent the rotor from obtaining the set rotational speed in response to the KE_{ss} exceeding the KE_{pred}.

2. The apparatus according to claim 1, further comprising a clock configured to generate a plurality of time signals spaced at a substantially regular time interval and transmit the plurality of time signals to the processor.

3. The apparatus according to claim 2, further comprising an input/output port configured to receive a plurality of speed signals associated with the rotational speed of the rotor from a speed sensor and transmit the plurality of speed signals to the processor, a first subset of the speed signals being associated with the rotational speed of the rotor while torque is being applied to the rotor by the motor, wherein the processor is configured to determine the acceleration rate in response to the first subset of speed signals and the time signal.

4. The apparatus according to claim 3, wherein at least two of the speed signals are associated with the rotational speed of the rotor while the motor is idling, wherein the processor is configured to determine the deceleration rate in response to the speed signals and the time signal.

5. The apparatus according to claim 3, wherein the input/output port is further configured to receive a toque signal from a torque sensor and transmit the torque signal to the processor, the processor being further configured.

6. The apparatus according to claim 3, wherein the processor is further configured to calculate the torque applied to rotor by the motor in response to a predetermined motor torque characteristic and a measured amount of current applied to the motor.

7. A system for controlling rotational speed of a rotor within a centrifuge, the system comprising:

a motor operative to rotate the rotor;

a controller configured to modulate an amount of torque generated by the motor and thereby modulate the rotational speed of the rotor;

a speed sensor configured to sense the rotational speed of at least one of the motor and the rotor, and transmit the sensed rotational speed to the controller; and

wherein the controller is configured to determine an amount of kinetic energy associated with the rotor in response to the amount of torque and the sensed rotational speed, and is configured to compare the amount of kinetic energy associated with the rotor to a predetermined amount of kinetic energy, the controller being further configured to reduce the rotational speed of the motor in response to the compared amount of kinetic energy associated with the rotor being greater than the predetermined amount of kinetic energy.

8. The system according to claim 7, further comprising a torque sensor configured to sense the amount torque generated by the motor and transmit the sensed torque to the controller.

9. The system according to claim 7, wherein the controller is further configured to calculate the amount of torque applied to rotor by the motor in response to a predetermined motor torque characteristic and a measured amount of current applied to the motor.

10. The system according to claim 7, wherein the controller is further configured to compare the amount of kinetic energy associated with the rotor to the predetermined amount of kinetic energy while the rotor is spinning at a relatively slow speed, the relatively slow speed being below a speed sufficient to impart an amount of kinetic energy that is greater than the predetermined amount of kinetic energy.

11. The system according to claim 7, further comprising a timer configured to count a time increment and transmit the time increment to the controller, wherein the controller is further configured to determine an acceleration rate of the rotor based on a change in rotational speed during the time increment.

12. The system according to claim 11, wherein the controller is further configured to determine a deceleration rate in response to a change in rotational speed during an idle state of the motor for the time increment.

13. The system according to claim 7, wherein the controller is further configured to determine the amount of kinetic energy of the rotor at a relative maximum speed of the rotor during a run, the controller being further configured to compare the amount of kinetic energy of the rotor at the relative maximum speed to the predetermined amount of kinetic energy and the controller being configured to substantially prevent the rotor from obtaining the relative maximum speed in response to the amount of kinetic energy of the rotor at the relative maximum speed being relatively larger than the predetermined amount of kinetic energy.

14. An apparatus for substantially preventing kinetic energy of a rotor from exceeding a predetermined amount of kinetic energy, the apparatus comprising;

means for determining a first kinetic energy of the rotor spinning at a first rotational velocity;

means for determining whether the first kinetic energy exceeds the predetermined amount of kinetic energy; and

means for modulating torque being applied to the rotor in response to the first kinetic energy exceeding the predetermined amount of kinetic energy, wherein the rotor is spun at a relatively slower rotational velocity than the first rotational velocity.

15. The apparatus according to claim 14, further comprising means for determining an acceleration rate of the rotor.

16. The apparatus according to claim 15, further comprising means for determining a deceleration rate of the rotor, wherein the first kinetic energy is determined based on the deceleration rate, the acceleration rate, the first rotational velocity and the torque being applied to the rotor.

17. The apparatus according to claim 14, further comprising means for determining the first kinetic energy prior to the rotor spinning at the first rotational velocity.

18. A method of substantially preventing kinetic energy of a rotor from exceeding a predetermined amount of kinetic energy, the method comprising;

determining a first kinetic energy of the rotor spinning at a first rotational velocity;

determining whether the first kinetic energy exceeds the predetermined amount of kinetic energy; and

modulating torque applied to the rotor in response to the first kinetic energy exceeding the predetermined amount of kinetic energy wherein, the rotor is spun at a relatively slower rotational velocity than the first rotational velocity.

19. The method according to claim 18, further comprising determining an acceleration rate of the rotor.

20. The method according to claim 19, further comprising determining a deceleration rate of the rotor, wherein the first kinetic energy is determined based on the deceleration rate, the acceleration rate, the first rotational velocity and the torque being applied to the rotor.

21. The method according to claim 18, further comprising determining the first kinetic energy prior to the rotor spinning at the first rotational velocity.